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Inaugural Dissertation
on
Asclepias Syriaca
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Introduction

Many motives led to the selection of the following vegetable, as the subject of an inaugural dissertation. Its claim to attention has not entirely escaped observation, although no strict or correct investigation of its medical properties has been hitherto made, nor any regular application of it, as far as I know, to the cure of disease.* From analogy, however, or from a vulgar and irregular use of the Asclepias Syriaca, it has been supposed, and found to possess qualities active and powerful. The introduction of a new remedy capable of effecting the cure of any disease of common occurrence, is certainly a valuable addition to the Materia Medica; but how much more valuable is the acquisition, when the medicine is the production of every part of our own soil, and applicable to the removal of many common, and often obstinate diseases? The universality of its growth in our own country, is an advantage that few other medical vegetables so eminently enjoy; and one by no means inconsiderable

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whether we consider the cost or the facility in obtaining our remedies, the latter of which is always a consideration of the utmost importance in the restoration of a patients health, and often in the preservation of his life. Elucidations of this fact it is not necessary to make, since a single reflection on the great necessity of the immediate action of an emetic or other medicines, in cases where an inordinate portion of narcotick or poisonous drugs have been taken into the stomach, sufficiently demonstrates the verity of the position.

The objections made against the addition of new medicines to the old catalogue of remedies, are by no means few nor inconsiderable. But they, like every thing else, have their proper boundaries, beyond which they cannot pass without becoming unworthy of regulation.

To define with exact precision all the qualities that an article should possess in order to be barely admitted, will not perhaps be found easy of accomplishment; yet as a general rule, none should attract notice which have not the power either of repelling or preventing

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disease, or of aiding others, by making the prescriptions more promptly and completely accomplish the object of their administration. On the other hand, we are most deliberately of opinion, that an article which has demonstrated the power either of curing, or preventing disease, or that has assisted others given for this purpose, should most readily be received as a new means of defending the system against the attack or ravages of disease. Whether this will be universally admitted as being correct or not, it is not easy to determine; for many medical characters whose talents, and professional greatness set at defiance the shaft of envy or jealousy, have repeatedly declared, that no new remedies were wanting for a malady, which one had so generally cured as to have received in relation to it, the appellation of a specific, as mercury in syphylis, and bark in intermittent fever. With every practitioner of any respectable pretentions to experience, these received specifics, have not unfrequently failed of their reputed success, and thus afforded incontestable proof of the necessity of

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calling in others, which though not perhaps so immediately efficacious, yet are not only advantageously resorted to, but found adequate as auxiliaries to the restoration of health.

Attention is particularly solicited to this part of these preliminary observations, as it is believed a correctness has been observed in relation to the present subject, which, if strictly adhered to in future investigations of it, must prove conclusive.

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Botanical Arrangement

The genus asclepias according to the sexual system of Linnæus, is assigned to the class Pentandria and order Monogynia

Its characteristics are as follows.— Calix small, 5-parted persistent. Corolla rotate mostly reflected. Nectarium or nectary, simple, 5-parted, segments ovate cucullate, each producing from its base an internal subulate averted awn. Antheridium 5-parted, crustaceous, sessile, angles opening by 5 longitudinal chinks. Follicles 2 ventricose acuminate smooth or muricate. Seed comose.

Natural History.

The A. Syriaca is a fine indigenous vegetable belonging to the natural family of plants termed apocyneæ. It is familiarly known by the following vulgar names. Milk weed. Syrian swallow wort. Silk weed. Wild Cotton. Cotton plant &c. &c.

The following description is by Dr Cutler "The leaves are spear or tongue shaped larger than the decumbens and in August its aggregate reddish or purplish blos-

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-sams are exhibited at the extremeties of the branches and axilla of the leaves. The seed are contained in large oblong pods and are crowded with down extremely fine and soft resembling silk which has occasioned the name of silk weed. This substance has been mixed with and spun into candle-wicks. The stalk of this species is from three to six feet high the leaves large standing on short foot stalks. A milky juice exudes from the stems and leaves when broken. The root as soon as it penetrates the earth shoots off horizontally and often sends off other stalks. The large roots are cortical and ligneous. It abounds near fences on the road side in all parts of the country,,

This beautiful plant is one of the most common inhabitants of our river banks. Its geographical range is extensive, being found from the northern to the southern extremeties of the union, in great abundance. It is generally found near creeks, but often grows in meadows, and sometimes even on the road sides remote from water. Its common hight is from three to four

feet; and in favourable situations it is rarely under four feet when mature. A white or milky fluid is discharged from every part of the plant when cut, even from the flowers when punctured; and hence the common name of Milk-weed. This milky fluid becomes viscid by desiccation between the fingers, and yields a substance differing in no essential property from caoutchouc or Indian rubber. The seed are furnished with a most beautiful long silken aprilly or appendage, resembling fine cotton, or raw silk.

It is said that this substance has been united with some other of longer staple, and manufactured into gloves, in France.

The proper time for collecting the plant for medical purposes is after its time of flowering which is in July and August; or while it is in seed, which happens in September. The root is perennial.—

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Experiments

These may be divided into series, the first of which were conducted with a view of ascertaining the properties of the plant gathered before it had grown to the state of ripeness. On the 15th June a quantity of the Silkweed was procured; it was small young and extremely tender, and after becoming dry I made the following experiments.

I. One ounce of the root was cut up and remained for ten days in a pint of proof brandy, at the end of this time two drams were taken without any operation. The quantity was increased to an ounce, and no effects were produced, which might not be very justly attributed to the stimulating property of the spirits, such as an accelerated circulation, flushed face, and after a while a degree of drowsiness.

2 A pint of proof brandy was poured upon one ounce of the leaves and stems, and remained for seven days when an ounce was taken. The effects in this case were analogous in every regard to the tincture of

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of the root. 3. Infusion made by pouring one quart of Cold water upon two ounces of the root broken down or coarsely powdered in a mortar. After 24 hours standing it was decanted off, and an ounce taken without effect. The dose was repeated until four ounces were swallowed, still no operation was felt.

4. This was managed as the third, except in this, that two ounces of the leaves & stems were used. The same doses were taken with the same result.

5. Three ounces of the plant were boiled in a quart of water until it was reduced to half the original quantity. Into this decoction an equal part of the leaves stems and roots entered, and two drams were first taken. This was so repeatedly doubled that two ounces were at last taken and proved entirely inert.—

The repetition of the above experiments was sufficiently great, and the uniformity of results so exact, as to leave no doubt as to their correctness; and they prove most conclusively, that the plant while in infancy does not posess the qualities that characterise the adult state.

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This was observed by the late Dr. Barton the Linnæus of America.
If the fact is established, it points out the necessity of collecting the vegetable after it has made its contribution to the decoration of nature with its blossoms.
This is by no means a peculiarity of the A. Syriaca; for the same may be said of the Poke or American night shade. On the 24 August a fine quantity of very large roots stems and leaves were obtained from the banks of the Schuylkill near the falls, of which the following preperations were made:

1. Two ounces of the root were affused for 24 hours in a quart of water; it was then boiled down to a pint and doses were taken and gradually increased to two ounces without occasioning any perceptible sensation.

2. A cold infusion was also made with two ounces of the root well beaten and put into a pint of water where it remained for two days. Two ounces of this were taken and proved inert. After observing that these experiments were often repeated with the root & by substituting the leaves and stems, the inference is easy which is this, that the

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water is not capable of extracting or dissolving the active principle. This circumstance leads to the belief that the active property resides in the form of a resin.

The next attempts of investigation were made by the following experiments which terminated more successfully.-

I. A tincture was prepared by putting one ounce of the well beaten root in a pint of proof brandy, where it remained for eight days. Believing this to be the proper mode of preparation, two drachms and were at first taken. No change took place, nor no operation was felt for twelve minutes. about this time however, the circulation became accelerated four beats in a minute; slight nausea was felt, which was immediately succeeded by, or accompanied with ~~XX~~, a moisture of the surface that was greatest on the forehead it soon subsided.

2. On the next day which was the 7th Septr. four drachms of the tincture were taken about twelve o clock. The nausea in this case was not much greater than in the preceeding nor arterial action much more influenced though there was a much greater display of the diaphoretic

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power of the medicine; for it produced a sweat that was kept up for thirty minutes. It is perhaps necessary to mention, that the medicine enjoyed no assistance from warm tea or close covering in bed, both of which are almost universally recommended when sudorifics are prescribed with a view to their complete or immediate action. It is also proper to state that the experiment was made in a close room while the weather was warm, though nothing like a perspiration previously existed.

3. At 11 o'clock A.M. on the 10th Septr. one scruple of the pulverised bark of the root was taken; no effect being produced it was repeated half an hour after the first was taken. This occasioned a moderate glow which however never amounted to a general perspiration, nor was there any nausea or excited circulation.

After this nothing was done to discover the action of the Syriaca in the healthy subject, except a few experiments instituted for the purpose of learning the action of the leaves & stems, which are not more than half so active.

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Application in Disease.

When the science of medicine was in its confused or chaotic state, and while many of our most valuable remedies rested in nature's great arcana, some species of the Asclepias were known to the ancients as medicines. The particular species or the time of their first employment does not appear. The vincetoxicum, so named from its supposed power of resisting and expelling poisons, was long since used in some countries for the cure of glandular obstructions, dysentery, and other diseases. The decumbens has from the earliest recollections been employed as a sweat in the inflammatory diseases. But of the Syriaca we have not heard much and the accounts given are general, as well as uncertain. It made its first appearance in a late & most valuable publication of Therapeutics and Materia Medica. Our very eloquent professor after treating of the decumbens and the diseases to which it is adapted observes "Of late I have understood, that another species of this plant has been found to have nearly the same properties with this addition, that it is narcotic, and affords much relief in asthma

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in old coughs, and even in pulmonary consumption.
As one of the lactescent plants, it is not improbable, that this may be in part true".
The late professor Barton wrote the following in his collections towards a Materia Medica of the United States.
"It seems that Mr Thomson entirely confined himself to the use of the asclepias decumbens or the species with beautiful orange coloured blossoms. He observes however that there are two other species of the pleirisy root which are known by the names of "Butter weed". It is probable therefore, that these two kinds (one of which I take for the Asclepias Syriaca well known by the names of wild cotton and cotton plant) have sometimes been used for the A. decumbens, and it is not unlikely, that a common assemblage of properties, belong to a number of the species of this fine family of plants".
These two paragraphs contain all of importance that has appeared concerning the medical use of our vegetable.
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follows a wound of the plant has, and continues to be used by the vulgar, for the cure of a herpetic or cutaneous disease known by the names of ring worms & tetters. To what extent it is successful in these cases it is impossible to say, having never experienced any trial in these affections. That it is useful however can scarcely be doubted, for unless it was occasionally so, its use would end.

The mode of its operation in this case is by no means clear; but from the narcotic effect which follows the continued administration of the lactescent plants, more especially of this, would it be an uncommon stretch of the imagination to suppose, that this principle was contained in the milk; and when applied in this form to the diseased surface, acted by soothing pain, allaying irritation, or by a specific salutary action capable of destroying that previously existing of a morbid nature.

As to the internal use of our medicine several diseases have already been mentioned in which it is advantageously

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employed; but are however out of them all, will be noticed to any extent. Its action in these diseased affections appears to be of a three fold nature, each pretty much influenced by the mode of administration; for, as will hereafter appear, it is no less useful as an expectorant, and narcotick, than as a diaphoretic medicine.
Rheumatism is a disease in which our vegetable has been employed with no ordinary degree of success, and as one of the most valuable properties of the Syriaca was discovered during its employment in a case of acute Rheumatism I beg to be indulged with the liberty of inserting it.
— Bryant, aged forty two years, experienced five years since slight, irregular, and wilde shooting pains, together with some of the other milder symptoms of Rheumatism, all of which were too feeble to characterise with certainty the disease or require medical aid. But about three years after this he had an attack of Rheumatism marked by the usual symptoms, and for the cure of which he was admitted into the P. Hospital where he remained four months before his disease was removed. In Nov 1817 he was again admitted

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into the same institution with another attack of the same disease, but his cure was less difficult than before.
On the 12th Oct. 1818 he once more applied, and was reviv-ed with the disease more violent than heretofore; and it is this attack only to be noticed. It was brought on by the common causes that precede the occurrence of the disease, such as vicissitudes of temperature & wet clothes which in this instance was the consequence of rafting timbers on the river. A troublesome catarrh augmented the distresses of our patient. The symptoms when he came were acute pain in his extremities, particularly in the large joints as the elbows & knees; his pulse was full frequent and hard apparently, though something like ossification prevented great accuracy in the examination of his arteries. Pyrexia and its evening exacerbations were present. In the joint of one knee an effusion had taken place to so great a degree that the patella was unnaturally loose, and elevated; it could be distinctly felt when placed in contact with the other bones of the joint.
Dr. Cullen says that this disease sometimes produces effusions

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of a transparent gelatinous fluid into the sheaths of the tendons. Whether this be of that nature or not, puncture alone could determine; the situation however is known to be different. The treatment of the case in the early part of the disease was that generally adopted, as bleeding purging and blistering, until all inflammatory action was reduced. The Dovers, powders were now ordered. He took them however only twice before permission was obtained to give the Ipiaca which was commenced on the 15th by giving one drachm a day in divided doses; or in other words by his taking fifteen grains every six hours of the pulverized bark of the root.

On the 16th the patient stated he had slept well which he had not before done, and that his cold was much relieved. This alleviation was no doubt the effect of a pretty copious perspiration that continued during the night. On the 17th the patient was examined by my friend Mr. Miller whose politeness and accuracy are equally admirable. He stated that Bryant was struck with the diuretic operation of the Ipiaca, without the least

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intimation of any such operation being expected, which in truth was not the anticipation of mysif.
To day 18th he is evidently better and sleeps so constantly as to become conspicuous to the other patients of the same ward. After this a change took place in the weather well known to be unfavourable to the cure of this disease. It became cold, windy, & cloudy with some rain and continued so until the 22nd which for a time disturbed the rapid march of the curative process that had made the patients soul chew up with hopes of a speedy return of health. On the 23rd he was much relieved; the pains instead of being acute assumed the nature of soreness and the catarrh was cured. On the 24 our patient complained of nothing but slight soreness in one arm particularly at the elbow & a stiffness of the knee containing the effusion which had greatly diminished. After this these symptoms gradually disappeared until the 25th when he was pronounced cured of rheumatism though some of its effects still existed in the forms of rheumatalgia

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The diaphoretic, narcotic, together with the diuretic operation of the medicine, were uniformly experienced during the whole time of its administration; a minute detail of which, in each account of the symptoms as they appeared daily, was deemed an unnecessary routine of repetition, answering perhaps not interesting in their nature, nor by any means valuable.

After the demonstration of the diuretic power of the silk weed in the above case, an anxiety arose to use it in a disease in which, this operation would be of more service, and liberty was immediately obtained to try it in the following

case. The first part of the history of this disease was obtained from the patient who was a sailor by the name of Carrell. Twelve months ago he was violently attacked with the autumnal intermittent fever to effect the cure of which he was admitted into the P. Hospital where he remained only two weeks before he was discharged as well. Not long after he returned with Jaundice, and a dropsical predispositon that more plainly

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exhibited itself in the form of anasarca of the legs, and of this he was also cured and remained well for several months. But this state of uninterrupted health it was not his good fortune long to enjoy, for on the fifth of October he was once more found an applicant for admission into a Hospital in which he, in common with thousands, had experienced a luxury of comforts, and a profusion of medical attention, equaled by no other institution that has for its object the relief of the afflicted. The disease of which he now complained was a dropsy in the form of ascites with occasional distention of his legs. The treatment at first consisted of frequent bloodletting, cathartics of calomel & jalap, until reduction was sufficiently accomplished to use the bark united with ~~crimor~~ tartar. The result of a fortnight's continuance of these remedies was salutary, for his abdomen was reduced to nearly its original size, though the distention of his legs was not removed.
At this time he took a cold, the symptoms of which were unusually violent, for his hoarseness rendered him inaudible and

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his cough prevented sleep or rest. The usual pectoral and expectorating mixtures were used for two days without the least success. At this period and in this situation leave was obtained to give the Sepiaca, which was done no less with a view of relieving his dropsy than catarrh ~~the of~~ which was at this time the most troublesome disease. Its use was commenced on the 22nd. Octr. by giving it as an expectorant in this ℞ Pulv. Syra gr viij Opii gr ¼ to be taken as often as the cough was troublesome. The next morning after the commencement of this new prescription our patient reported that he had slept well, coughed less, and with more ease.
On the 24th. expectoration was free and copious, his hoarseness entirely removed, and his general health improved. On the 25th he was still mending, and on being asked how the medicine operated said that it made him sweat all night and pass urine all day and he also declared that it had done him more good than any other medicine he had taken. Notwithstanding all this the practice was changed and the Syraca omitted. From the diuretic nature of the milk were it promi

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-set to be a remedy in the treatment of very many diseases. This great determination of action, to the urinary system, led to the belief that it might either cure or assist in the cure of the most common disease to which the dissipated are subject. Soon after these reflections an opportunity presented for experiment.

Case. The disease of the present case was gonorrhoea which appeared about the 15th Octr. in a Sailor who came into the Hospital on the 23rd He experienced great distress from the chordee, an effect by no means unusual of this disease. The treatment was commenced by giving a saline cathartic and after this the balsam Copaiva was ordered; he however took only one or two doses before it was laid a side and opium given to relieve the chordee. On the next day the opium was also left off, and the employment of the Syriaca commenced by giving two drachms of a gin tincture made with an ounce of the root to a pint of Holland gin; and the dose taken five or six times during the 24 hours. Our patient was relieved of his chordee and the discharge so much diminished in two days as to

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be considered nearly cured. He remained until the 5th day when he was discharged well without ever using any injections, or doing more than I have mentioned. Circumstances prevented my attending to this very interesting trial of the medical powers of our vegetable in a disease so very often obstinate

My very obliging friend Doctr Coates whose great attention to every circumstance relating to his profession is worthy of imitation, gave me the result in general terms.

The Syriaca though a known remedy in many diseases, is much more valuable on account of its diuretic powers. If from conclusions or deductions which might be reasonably drawn, from what we have seen, there yet remains many morbid affections controlable by the powers of the Syriaca. I shall conclude by expressing a regret that my experience in the employment of the Asclepias Syriaca, has been so limited. I am fully aware, that the few cases of disease, in which I have had an opportunity of seeing it exhibited, were not sufficient to settle definitely, its character as a medicine; for new remedies ought not without great

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circumspection, to be introduced into the Materia Medica, and used in practice. Nothing is more common, than for articles to be hastily brought into notice, after a slight trial, and again abandoned as altogether useless. Such proceedings I highly disapprove, and such an event it is my wish to avoid. But although enough has not, yet, perhaps been done, to give to the Syraca a high and permanent standing in the Materia Medica of our country, it will not be denied, that the result of the few experiments made with it, is such, as richly to entitle it to further notice. Nor am I in doubt as to future trials for that article, which, while, by its anodyne qualities it relieves pain, and acts at the same time on the kidneys or skin, cannot fail to prove a valuable remedy in the hands of enlightened and skilful practitioners. To such characters I beg leave to recommend the Syraca, convinced, that their opportunities will enable them to do it that justice, which, as yet, it has not been in my power to accomplish. I feel persuaded it will reward their efforts by the aid it will give them in the cure of disease

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Attached as I am to the medical school of Philadelphia, by every tie that can bind the pupil to his alma mater, I hope, in particular, that ere long the professors of Materia Medica and of the practice of physic in that illustrious institution, will make fully known in their lectures to the physicians of the United States the real virtues and uses of this, and all other indigenous plants of their happy country.

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